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RAIL COACH FACTORY, KAPURTHALA

MD48144

Date: 20.12.2014

Sub: Specification no. MDTS-130 Rev-01 for Schedule of Technical Requirements of Aluminum Flexible Pipes.

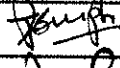

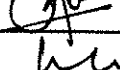
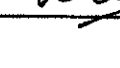
Please find enclosed a copy of spec. no MDTS-130 Rev-01 for Modified Coach Watering Inlet for Side Filling Arrangement for LHB type & conventional type coaches.


(Joginder Singh)
SME/D-1

Dy CPLE-III

Copy to: CQM, CPLE, CWE/Fur, CMM/RCF, CMT, CMM/TKJ
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SPECIFICATION	SCHEDULE OF TECHNICAL REQUIREMENTS OF ALUMINIUM FLEXIBLE PIPES	MDTS:130 REV: 01 PAGE 1 of 3 DATED 10-10-2014
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Name	Designation	Signature	Date	Level
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JOGINDER SINGH	SME/D-1		10.10.2014	Agreed
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PARMAMNAND SINGH	CDE		10/10/14	Approved

Issue/Rev	Details of changes	Date
Rev.01	Para 2.0 (ii) modified to reduce the stretchable limit from 2.5 times to 1.5 times.	10.10.2014


Prepared By


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1.0 SCOPE :

This specification covers the general and technical requirements of aluminum flexible pipe to be used generally for air distribution for ducting arrangement.

The flexible pipes may be in circular or rectangular form. The type and size of the pipe shall be indicated in the order.

2.0 TECHNICAL & GENERAL REQUIREMENTS:

- i) The material of flexible pipe shall be IS: 737-86 Gr. 31000H2.
- ii) The pipe shall be stretchable i.e. on stretching pipe length shall get extended to minimum 1.5 times of the length of pipe.
- iii) The pipe shall be flexible and non-inflammable to grade A1 of DIN-4102.
- iv) It should be possible to bend the pipe.
- v) The flexible pipe shall withstand air pressure as indicated below and shall not break during usage.
- vi) The flexible pipes shall meet the following properties:

Table-I

SN	Description	Requirements	Remarks
1	Minimum thickness of the pipe	0.15mm	-----
2	Allowable pressure of air in Pascal, the pipe can withstand without failure	2000	IS:3768-1996 Annex.-C
3	Minimum bending radius at which the pipe can be bent without breaking (In uncompressed form)	300mm	Annex.-A
4	Maximum permissible sag (In un-compressed form)	20 mm	Annex.-B
5	Maximum Compressing force to compress the pipe length up to 0.9 times the original length in compressed form.	600 N	Annex.-C

3.0 PROTOTYPE APPROVAL:

The manufacturing is required to submit a prototype sample of the flexible ducting along with the test certificate from authorized laboratories regarding properties indicated in clause 2.0 of this specification for approval of prototype pipes prior to bulk supply.

4.0 PACKING:

The aluminum flexible pipes shall be supplied in the compressed form and in properly packed condition in order to avoid any damage during transit and handling.



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Annexure-A

Method of measuring minimum bending radius

- 1.0 This annex specifies the method for determining the minimum bending radius of flexible aluminum pipe without breakage. The test shall be carried out at an ambient temperature within limit of 10 °C to 35°C.
- 2.0 The test consists of bending the flexible pipe around a grooved former of a radius 300-mm and angle of 90°. The force shall be applied manually.
- 3.0 For convenience of gripping, the ends of test piece may be plugged. The unfilled test piece of the tube is bent by means of applying force around the grooved former (bending mandrel) of 300-mm radius. and angle of 90°. The pipe is held there for 60 secs. Absence of visible cracks with the use of magnifying aid shall be considered as the evidence that the piece has passed the test.

Annexure -B

Method of measuring Sag

- 1.0 Cut the flexible pipe of 1-meter length with flat edges. The cutting edges shall be smooth and perpendicular to the longitudinal direction.
- 2.0 Place the flexible pipe of flat surface plate and check the smoothness of the surface of flexible pipe by checking that the whole length of the pipe is touching the flat surface and there is no bending.
- 3.0 Place the 0.5 meter length of the pipe on the flat surface plate and let the 0.5 meter length of the pipe be unsupported.
- 4.0 Check the difference between the lowest edge of the hanging edge of the pipe with the flat surface level.
- 5.0 If the difference is equal to or less than 20 mm, it shall be considered that material have passed the test.

Annexure -C

Method of Compression Force

- 1.0 **Scope:** This test consists of measuring the load necessary to maintain 90% compression of length of the pipe for 60 sec.
- 2.0 **Apparatus:** The apparatus shall have a flat compressor foot, larger than the specimen being tested, a force measuring device, a means of mounting the specimen on a level plate in such a manner that it can be deflected at a rate between 0.2 and 8 mm/sec.
- 3.0 Cut the edges of the flexible pipe in flat direction and edges shall be vertical in the longitudinal direction.
- 4.0 Place the specimen in the compressing machine.
- 5.0 Compress the specimen to its 90% length of the pipe and keep the pipe in compressed form for 60 secs.
- 6.0 Note the force, if the force is less than or equal to 600N, it shall be considered that the material has passed the test.

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